

# California Public Employees' Retirement System

## State and Schools Pension Plans

### Parallel Valuation and Certification

Report Completed In Satisfaction of  
Task 5 of Contract 2003-3236

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## Background and Purpose

Under Task 5 of Amendment No. 2 of Contract 2003-3236 (the Contract), EFI Actuaries is charged with preparing a parallel valuation and certification (the Report) of the 2006 annual valuations of the state and schools pension plans (the Plans). The Contract language dealing with the Report is as follows:

Upon the completion of the June 30, 2006, state and school annual valuations by CalPERS staff, approximately in April 2007, the Contractor shall perform a parallel valuation and certification of those valuations including the required GASB 25 and 27 disclosure information. This will include a review of those assumptions, methods and procedures which are relevant and necessary in accordance with generally accepted actuarial standards and certification of the contribution rates and accrued liabilities.

This Report presents the methodology and results of the parallel valuations conducted by EFI. Special areas of investigation that were pursued by EFI are also described in the body of this report. Comparisons of actuarial calculations and member data for each plan are shown within the tables in the body and appendices of the Report.

## Principal Results

Based on our parallel valuations of the State Plans and the County Schools Pool, EFI Actuaries certifies that the accrued liabilities and employer contributions computed by the CalPERS Actuarial Office are accurate within professional tolerances and were calculated in accordance with generally accepted actuarial practices.

The work produced by the Actuarial Office currently maintains a high professional standard, and it continues to improve. During the term of Contract 2003-3236, the actuarial valuations of the State and Schools have been of consistently high quality. Furthermore, any issues arising during the parallel valuation effort were discussed with PERS Staff and resolved to our satisfaction.

## Exceptions

There were a few areas in which the methods and assumptions adopted by PERS staff differed from those recommended by EFI. These have been discussed with staff, and are explained in more detail below. Briefly, they are as follows:

- In the State and Schools valuations, it was being assumed that active State Miscellaneous and Schools members would suffer a significant number of service-related deaths. This was an inadvertent misapplication of duty mortality rates to these groups, and it caused a small overstatement of employer contributions.

- There are several plans in which there are a significant number of transferred members, causing vesting and benefit service to differ. For these plans, we recommend that during the next actuarial experience study rates of termination and pay increase should be studied against both types of service. This offers the possibility of improving the accuracy of the actuarial assumptions for these plans.
- At present, the annual employer contribution or premium for Group Term Life Insurance (GTLI) is determined separately for each plan. If the GTLI premium were computed on a combined basis for all plans, it could improve the stability of the program. We recommend this area be studied further.
- Data processing techniques employed for some small groups of retirees and beneficiaries may cause a misstatement of liabilities due to operation of the Purchasing Power Protection Account (PPPA). These misstatements are not material.
- For purposes of projecting payroll for the amortization of State Miscellaneous unfunded liabilities, we recommend that Tier 2 payroll be projected using the expected termination and hire patterns in State Miscellaneous, rather than by using a fixed rate of annual decrease in payroll.

## Review of the 2006 Actuarial Valuations of the State and Schools

Under Task 5 of Contract 2003-3236, EFI Actuaries conducted parallel actuarial valuations as of June 30, 2006 of the State and Schools Pension Plans of the California Public Employees' Retirement System (CalPERS). The purpose of these valuations was to validate independently the actuarial valuations of these plans performed by CalPERS' staff actuaries.

As a result of our efforts, we are able to certify that the liabilities and costs computed by the staff as of June 30, 2006 are reasonably accurate and were computed in accordance with generally accepted actuarial principles. Based on the data, assumptions, and methods employed in the staff valuations, the employer contribution rates independently computed by EFI were within 5% of those in the staff valuations for each plan. The total FY 2008 contribution determined by EFI was within 1.3% of the amount computed in the staff valuations.

Additionally, the liabilities (fully projected basis as well as accrued basis) computed by EFI were within 2% of those in the staff valuations for all of the plans, and within 1% for the combined State plans.

Tables 1 - 4 below show the liabilities, total normal cost rates, and employer contribution rates computed by CalPERS staff and by EFI for each of the State and Schools plans. Table 5 shows a comparison of the total Fiscal Year 2008 contribution in dollars.

**Table 1: Comparison of Present Value of Future Benefits (\$ millions)**

| Plan                                    | PVFB as<br>Computed by PERS | PVFB as<br>Computed by EFI | Relative<br>Difference |
|---|-----------------------------|----------------------------|------------------------|
| State Miscellaneous                     | 71,711                      | 72,032                     | 0.4%                   |
| State Industrial                        | 2,469                       | 2,459                      | (0.4%)                 |
| State Safety*                           | 5,853                       | 5,855                      | 0.0%                   |
| State Peace Officers &<br>Firefighters* | 26,396                      | 26,195                     | (0.8%)                 |
| California Highway<br>Patrol            | 6,937                       | 7,017                      | 1.2%                   |
| <b>Total State</b>                      | <b>113,366</b>              | <b>113,558</b>             | <b>0.2%</b>            |
|   |                             |                            |                        |
| <b>County Schools Pool</b>              | <b>52,609</b>               | <b>53,630</b>              | <b>1.9%</b>            |

\* Reflects liability transfer

**Table 2: Comparison of Accrued Liabilities (\$ millions)**

| Plan                                    | Accrued Liability as<br>Computed by PERS | Accrued Liability as<br>Computed by EFI | Relative<br>Difference |
|---|--|---|------------------------|
| State Miscellaneous                     | 61,299                                   | 61,927                                  | 1.0%                   |
| State Industrial                        | 1,870                                    | 1,898                                   | 1.5%                   |
| State Safety*                           | 3,907                                    | 3,896                                   | (0.3%)                 |
| State Peace Officers &<br>Firefighters* | 19,737                                   | 19,838                                  | 0.5%                   |
| California Highway Patrol               | 5,744                                    | 5,698                                   | (0.8%)                 |
| <b>Total State</b>                      | <b>92,557</b>                            | <b>93,257</b>                           | <b>0.8%</b>            |
|   |  |   |                        |
| <b>County Schools Pool</b>              | <b>41,409</b>                            | <b>41,270</b>                           | <b>(0.3%)</b>          |

\*Reflects liability transfer

**Table 3: Comparison of Total Normal Cost (% of payroll)**

| Plan                                | Normal Cost Rate as<br>Computed by PERS | Normal Cost Rate as<br>Computed by EFI | Relative<br>Difference |
|-------------------------------------|---|--|------------------------|
| State Miscellaneous Tier 1          | 14.372%                                 | 14.012%                                | (2.5%)                 |
| State Miscellaneous Tier 2          | 9.846%                                  | 9.625%                                 | (2.2%)                 |
| State Industrial                    | 17.510%                                 | 17.208%                                | (1.7%)                 |
| State Safety                        | 21.112%                                 | 20.974%                                | (0.7%)                 |
| State Peace Officers & Firefighters | 24.644%                                 | 23.650%                                | (4.0%)                 |
| California Highway Patrol           | 23.552%                                 | 22.878%                                | (2.9%)                 |
| <b>Total State</b>                  | <b>17.468%</b>                          | <b>16.990%</b>                         | <b>(2.7%)</b>          |
|                                     |   |  |                        |
| <b>County Schools Pool</b>          | <b>14.421%</b>                          | <b>14.199%</b>                         | <b>(1.5%)</b>          |

**Table 4: Comparison of Employer Contribution Rate<sup>1</sup> (% of payroll)**

| Plan                                | Contribution Rate as Computed by PERS | Contribution Rate as Computed by EFI | Relative Difference |
|-------------------------------------|---------------------------------------|--------------------------------------|---------------------|
| State Miscellaneous Tier 1          | 16.633%                               | 16.796%                              | 1.0%                |
| State Miscellaneous Tier 2          | 16.565%                               | 16.844%                              | 1.7%                |
| State Industrial                    | 17.319%                               | 17.653%                              | 1.9%                |
| State Safety                        | 18.835%                               | 18.829%                              | (0.0%)              |
| State Peace Officers & Firefighters | 25.552%                               | 24.965%                              | (2.3%)              |
| California Highway Patrol           | 32.115%                               | 30.866%                              | (3.9%)              |
| <b>Total State</b>                  | <b>19.371%</b>                        | <b>19.317%</b>                       | <b>(0.3%)</b>       |
|                                     |                                       |                                      |                     |
| <b>County Schools Pool</b>          | <b>9.306%</b>                         | <b>8.994%</b>                        | <b>(3.4%)</b>       |

**Table 5: Comparison of Employer Cost (\$ millions)**

| Plan                | PERS Total Contribution for Fiscal Year 2008 | EFI Total Contribution for Fiscal Year 2008 | Relative Difference |
|---------------------|--|---|---------------------|
| State               | \$ 2,747                                     | \$ 2,732                                    | (0.5%)              |
| County Schools Pool | 920  | 887   | (3.6%)              |
| <b>Total</b>        | <b>\$3,667</b>                               | <b>\$3,619</b>                              | <b>(1.3%)</b>       |

In general, we found that the liability and cost computations were prepared by CalPERS' staff in a careful, thorough, and professional manner. Further areas of investigation that we pursued in depth are outlined below, as well as their implications for future valuations.

<sup>1</sup> Does not include rate for GTLI benefits

## Contribution Rate Sensitivity

As shown in the tables above, the accrued liability and total normal cost calculations determined by EFI are within 5% of those determined by PERS in all cases, and within 3% in most cases. The total contribution based on EFI calculations for all plans combined is \$3.619 billion, which is within 1.3% of the amount of \$3.667 billion shown in the valuation report.

In performing a parallel valuation, it is important to note that the employer contribution rate is very sensitive to small changes in plan liabilities. For a funded plan, a small difference in accrued liability will result in a much larger difference in the unfunded accrued liability. Add to this the presence of employee contributions, and small liability differences translate to large impacts on the total contribution rate. For example, even though the accrued liability and total normal cost computed by EFI for the County Schools Pool were within 0.3% and 1.5% respectively of those determined in the staff valuations, the total cost computed by EFI was more than 3% lower.

This is not a temporary anomaly – the issue will always have the potential to distort total cost results. For this reason, during the audit we focus principally on the comparison of normal cost and liabilities, as well as comparisons of data and other present value calculations (see Appendices 1 and 2).

## Service Issues

As part of our review, we compared the results of “test life” computations performed by CalPERS staff with those performed by EFI. A test life is a single member record that is analyzed in detail by an actuarial modeling system. By studying the output of such test life calculations, the accuracy of the actuarial software can be verified.

During our examination of test lives and valuation results, we noticed that many individual active participants have different amounts of vesting service and benefit service. This is unusual in most plans: Typically vesting and benefit service are measured from the date of hire. However, when members transfer between plans within a common system, they may earn vesting service from their original date of hire, but benefit service only while in a particular plan. This situation – which is fairly common within CalPERS – makes the actuarial calculations a bit complicated as decrements, vesting, and eligibility are based on vesting service, but benefit amounts are based on benefit service.

As discussed in the next section of the Report, we developed a new actuarial valuation system specifically for the State & Schools valuations which allows us to investigate the impact of these service differences, as well as other nuances in the application of actuarial methods and assumptions.

Differences in vesting versus benefit service often impact valuation results significantly. As noted

above, assumed rates of decrement and salary increase are based on vesting service. For example, consider a Schools member with ten years of vesting service and five years of benefit service. The normal cost for this member varies by about 9% depending on whether vesting service or benefit service is used to decide which decrement rates to apply. For plans with a substantial portion of the membership with service in more than one CalPERS plan, there could be a significant impact on valuation results and employer contribution rates.

After extensive review and analysis, we believe that the methods used by PERS staff to compute plan costs and liabilities with respect to service differences are well within reason and acceptable practice.

For the next experience study, we recommend that the impact of retirement and termination behavior as well as salary increases be examined on both bases (vesting service and benefit service) to determine which yields the strongest correlation with member behavior.

### Duty Mortality Assumption

Deaths among active members can occur from either service or non-service related causes. Among general service members, service deaths are so rare that there is no assumption for service (duty) deaths among these members. Of course, actuarial valuations for safety members contain assumptions for both duty and non-duty deaths among active members.

In reviewing several individual test life calculations, we noticed that duty mortality rates were being erroneously applied for Miscellaneous Plan members and for Schools Plan members. Only non-duty death rates should be assumed for these general service members. As a result, there is a modest overstatement of employer contributions for these two plans.

Since death benefits do not represent a significant portion of the plans' liabilities, the impact of this error is not significant. Table 6 below shows the impact of the incorrect application of duty death rates on actuarial calculations.

**Table 6: Effect of Assuming Duty Mortality for Active Participants**

| <b>Valuation Result<br/>(Active Participants Only)</b> | <b>Miscellaneous Plan</b> | <b>Schools Plan</b> |
|--|---------------------------|---------------------|
| Present Value of Future Benefits                       | 0.04%                     | 0.20%               |
| Accrued Liability                                      | (0.10%)                   | (0.10%)             |
| Present Value of Future Salary                         | (0.20%)                   | (0.20%)             |
| Total Normal Cost                                      | 0.080% of pay             | 0.085% of pay       |
| Employer Contribution                                  | 0.033% of pay             | 0.057% of pay       |

Table 6 demonstrates that applying the duty death mortality rates to general service members increased the normal cost of the State Miscellaneous and Schools Plans by about 0.08% of payroll, while causing a small (0.10%) understatement in the accrued liability. These effects combined to increase cost by 0.033% of payroll above the correct level for the State Miscellaneous, and 0.057% for the Schools Pool.

Therefore, the impact on valuation results of this error is very small. The impact on Group Term Life Insurance calculations could be more noticeable, as discussed below. Discussions with PERS Staff have confirmed that the impact of this issue is not material, and that a correction will be made going forward.

### **POFF Liability Transfer**

A portion of the retirees in the State Safety Plan should actually be included in the State Peace Officers and Fire Fighters Plan. This group is closed, and represents about 87% of the members who retired in the State Safety Plan before 1984. Accordingly, during each annual valuation of the State Safety Plan and the State Peace Officers and Fire Fighters Plan, a liability is calculated for a fixed proportion of the pre-1984 retiree liability for the Safety Plan, and transferred from the State Safety Plan to the State Peace Officers and Fire Fighters Plan. For the June 30, 2006 valuation, the amount of this liability was approximately \$398 million.

To verify this amount, we recomputed the liability using the same actuarial methods and assumptions. The liability EFI calculated - \$403 million - was within 1.3% of the liability calculated by PERS staff, on a relative basis.

While this is not a substantial part of the valuation of the state Plans, the confirmation of this number provides an added degree of assurance that the valuation results are reasonable. It is somewhat of an audit within an audit: The calculation deals with only a small subgroup of a population, so the fact that we are able to match so closely is further confirmation that the staff valuation is reliable.

This liability will decrease over time as pre-1984 retirees die. At some point, the impact will disappear.

### **Group Term Life Insurance Benefits**

As part of the valuation of the State Plans, a contribution rate is developed for Group Term Life Insurance (GTLI) benefits. This contribution is based on the excess of the term cost (150% of expected benefit payments) over the actuarial value of GTLI assets held by the plan.

As of June 30, 2006, a contribution was required for two of the State plans – California Highway Patrol (CHP) and State Industrial. Because assets exceeded the term cost for the remaining State plans, no contribution was necessary.

Using the term cost methodology employed by PERS, we were able to confirm that only the CHP and Industrial plans required contributions. When we projected GTLI benefit payments for these two groups, our results were very close (within 8% in each case) to those computed by PERS and shown in the valuation report. (Because assets are nearly equal to term costs, the contribution rates are very small, so they are extremely sensitive to differences in the expected benefit payments. Consequently, we compare only projected benefits).

A hidden problem with the duty mortality issue discussed above is that while it has a negligible impact on pension plan costs, it does have a more noticeable impact on expected GTLI payments, because the total benefit payments are solely based on death benefits. We estimate that assuming duty mortality applies to general service employees caused a 28% increase in expected GTLI payments to Miscellaneous Plan members. Since no GTLI contribution rate was required for the Miscellaneous Plan, this had no bearing. However, it does make one aware of possible unexpected consequences of otherwise small changes in assumptions.

Since all six State plans provide the same GTLI benefit, it may be appropriate to combine the GTLI funds of these plans and perform just one cost calculation. As of June 30, 2006, GLTI assets exceed term cost by over \$3 million. Combining all plans would result in no required contribution to GTLI for all State plans. We also note that the actuarial value of assets for the CHP Plan is currently negative due to heavier than expected claims. This is not surprising as benefit payments may fluctuate by more than 50% from one year to the next. Combining the plans into one would greatly reduce claims variability, which would in turn mitigate the possibility of negative assets, as benefit fluctuations would be smoothed by virtue of a larger pool of participants.

### **Purchasing Power Protection Allowance**

All of the State and Schools plans provide retirees with a Purchasing Power Protection Allowance (PPPA), which grants an increase in benefits when actual cost-of-living adjustments (COLAs) do not reasonably keep up with actual inflation. During the course of the audit, two issues pertaining to PPPA were revealed.

The CalPERS Actuarial Valuation System (AVS) was modified several years ago to use the current PPPA payment from the input data and calculate future PPPA payments when appropriate. After a comprehensive review of several sets of beneficiary data, it was discovered that AVS recalculates a PPPA if a beneficiary is receiving payments as the result of a member's death in service. As a result, any beneficiary of a member who died in service and who received an ad hoc COLA in the 1970s or early 1980s would be valued with a higher total benefit than their actual payment amount.

The second issue also deals with data processing. As part of the AVS valuation, multiple retiree records for the same member are often combined into a single record. This is a reasonable and efficient approach; however, occasionally records are combined that should have been left separate because one is the member's own benefit and the other record is a beneficiary record (i.e., the member is receiving a second benefit as a result of the spouse's death). In some cases, this results in the calculation of a PPPA benefit that is not actually due. It may also result in the combined benefit being shown as payable in one benefit form, when in reality there should be two forms of benefit payment (e.g. single life annuity and 25% continuation).

Neither of the above causes a material change in plan liabilities: Only a small number of retirees are affected, and the differences in benefit amounts are relatively low. Discussions with PERS Staff have indicated that the processes described above will be revised to more accurately reflect actual benefits paid.

### Miscellaneous Tier 1/Tier 2 Dynamics

As a result of SB 400, new State Miscellaneous hires generally join Tier 1. Furthermore, current Tier 2 members may transfer to Tier 1, provided that they either make up for past contributions or accept an actuarially reduced retirement benefit. As a result, Tier 2 active membership may be expected to decline over time as Tier 2 members retire, terminate, become disabled, die, or transfer to Tier 1 and are not replaced by new hires. This gives rise to several issues.

#### Benefits

Handling of active members by AVS is done by the following process:

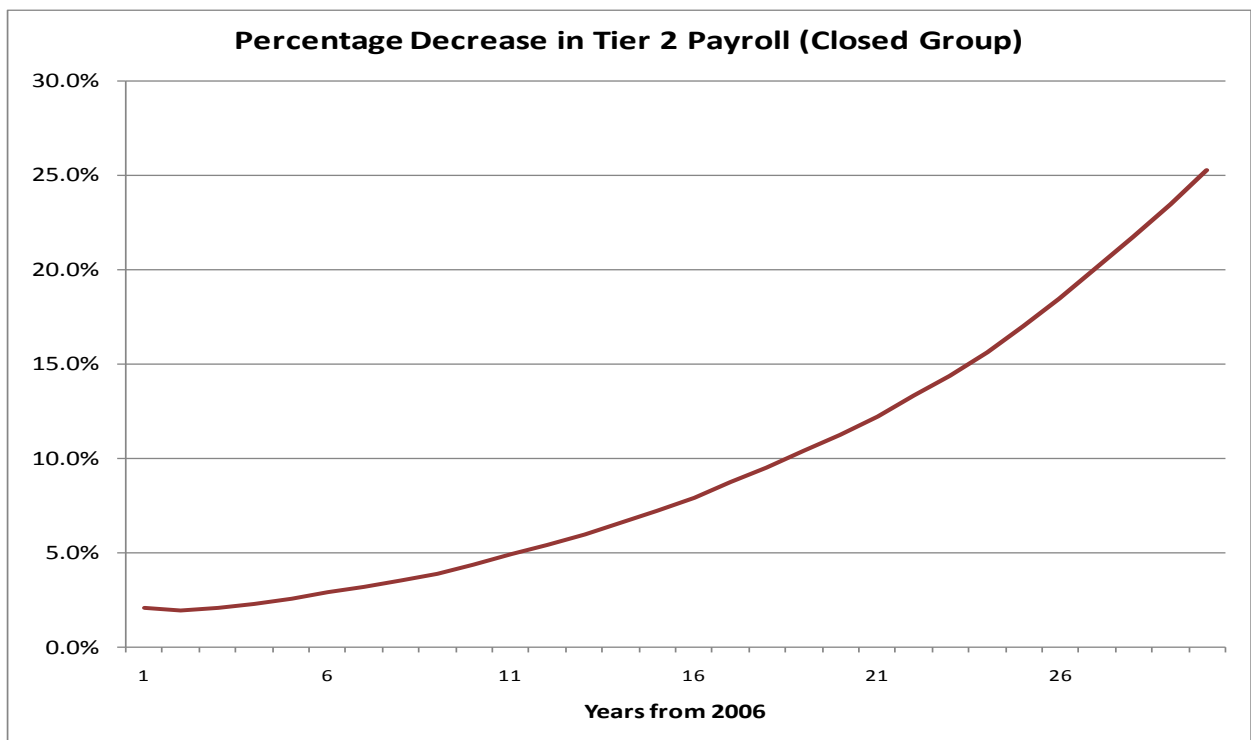
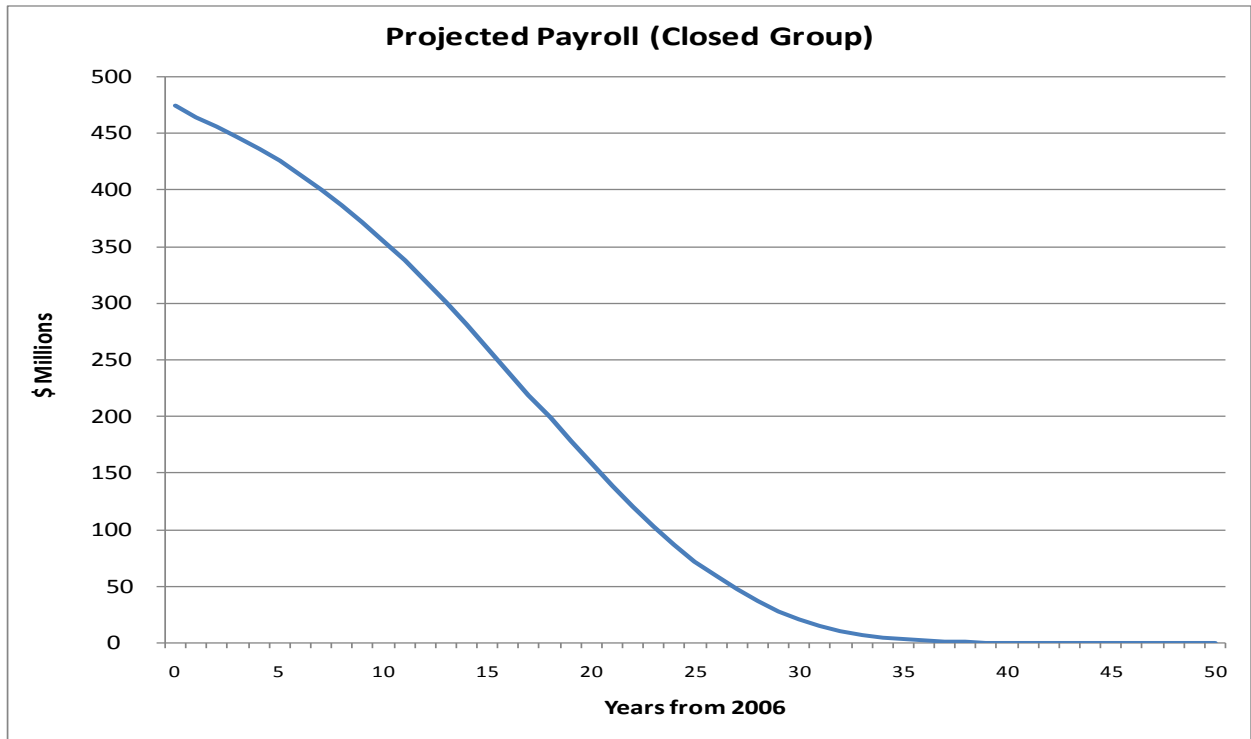
1. Project the hypothetical Tier 2 employee contribution balance to retirement;
2. Assume that the member will elect to join Tier 1 at retirement and take the 2% @ 55 formula; and
3. Actuarially convert the hypothetical Tier 2 contribution balance into a lifetime deduction from the Tier 1 pension benefit.

We reviewed this approach and found it be reasonable and sufficiently conservative, and we created a valuation model which mimics the same methodology. As shown in Table 3, the normal cost for Tier 2 members we computed is within 2.2% of that computed by PERS.

#### Payroll Projection

It is currently assumed that Tier 2 payroll will decrease by 1% per year in projecting employer contributions. This assumption has been in place since 2000, and is still reasonably accurate; however, it will need to be monitored for an inevitable future adjustment.

The graph below shows a projection of Tier 2 active payroll for the next 50 years assuming no new entrants and no transfers to Tier 1.



Translating the projected payroll into annual changes, we can analyze the expected decrease in Tier 2 payroll, year by year. The results of this analysis are shown in the second graph on the prior page.

The annual decrease in total Tier 2 payroll will quickly grow, as shown in the chart above. Within about 10 years, the expected annual decrease will reach 5%. Based on this analysis, we recommend either an explicit payroll projection to determine the projected contribution amount, or a review of factors every few years.

This factor does not have a significant impact on total Miscellaneous Plan costs, as Tier 1 currently represents about 95% of the total contribution amount.

## Methodology

In order to verify the correctness of calculations in the State & Schools valuations, EFI conducted a number of independent, parallel valuations using its own actuarial models. These independent valuations determine whether actuarial assumptions and methods as described in the CalPERS staff valuation reports are applied properly and yield the reported results.

In preparing our parallel valuations, we relied on member and asset data supplied by CalPERS staff. As is usual in actuarial valuations, this data was neither audited nor independently verified.

Parallel valuations were conducted for all plans. In the past, EFI used the EFI Visualization and Animation (V&A) Actuarial Model in its parallel valuations of State & Schools plans. However, for this Report EFI has developed an enhanced version of the valuation system which is used for EFI's actuarial audit of the CalPERS public agency valuations. This valuation system has no components in common with V&A, and it operates on completely different principles.

There were a couple of reasons EFI took this step.

### 1. A Different Perspective

An actuarial valuation system may be regarded as a kind of language for modeling a pension plan. In the case of human languages, some concepts are easier to express and deal with in one language than in another. In the case of actuarial valuation systems, benefit provisions that are easily and naturally handled in one system may require approximations in another. This issue is discussed in more detail below.

As this issue applies to an actuarial audit, errors and other issues that are easily uncovered by a parallel valuation in one system may be extremely difficult to detect under another. Therefore, changing the valuation system allows us to review the CalPERS staff valuations in a new way, focusing on new issues and different types of potential error.

### 2. Strengthening the Audit Process

Developing and deploying a new valuation system forced EFI staff to approach the certification process from scratch. New actuarial models had to be developed, tested, and used in our audit effort. All aspects of the audit were reexamined.

In a real sense, by changing its systems, EFI has changed the auditor on the Board's behalf. While EFI staff has not changed – retaining the knowledge and experience of that staff – the software and supporting systems have been replaced, forcing a new approach to the audit. Therefore, without the disadvantage of losing the experience and knowledge of the current

auditor, the traditional advantages of changing the auditing firm have been realized, as was the case when we made a similar change in models for public agencies valuations.

There are a number of differences between the V&A Actuarial Model and the new EFI model used in this Report.

#### 1. Handling of Active Member Service

V&A made no distinction between eligibility and benefit service, while the new model handles each separately. There is no significant difference for most plans. In those cases where there is a significant amount of CalPERS system service outside of the Plan, enabling earlier benefit eligibility than would be allowed by Plan service alone, an adjustment was required for V&A. No comparable adjustment is needed with the new model in these situations.

Furthermore, the new model allows easy and dynamic examination of individual member records, which is not a feature of V&A. This was a significant factor in the assessment of many of the issues described in the previous sections of this Report.

#### 2. Computation of Accrued Liabilities

The EFI V&A Model and the CalPERS Actuarial Valuation System (AVS) compute entry age normal past service liabilities and normal costs slightly differently. For a typical group, the V&A System will produce past service liabilities about 4% higher than that produced by AVS. Either approach is acceptable; that adopted by AVS is probably more common. Consequently, where this difference produced a significant effect on plan cost, the V&A Model was modified to reflect this methodological difference.

The new valuation model was designed from the outset to compute entry age normal past service liabilities and normal cost in the same manner as AVS. Accordingly, no adjustments were necessary.

#### 3. Computation of Liabilities

The EFI V&A Model computes liabilities by discounting future cash flows; the new valuation model uses the traditional approach of actuarial commutation functions. As a result, the impact of the PPPA is easily computed under V&A, but it required a small adjustment in the new model.

Overall, the new EFI valuation system and V&A get to the same destination – the same liabilities and costs – but do so by different routes. This orthogonal approach to parallel valuation greatly improves the quality and thoroughness of this audit.

## Appendix 1: Demographic Data Comparison

| Plan                                | Active Participants |      |                 |      |             |        | Retirees                      |         |
|-------------------------------------|---------------------|------|-----------------|------|-------------|--------|-------------------------------|---------|
|                                     | Average Age         |      | Average Service |      | Average Pay |        | Total Benefits* (\$ millions) |         |
|                                     | EFI                 | PERS | EFI             | PERS | EFI         | PERS   | EFI                           | PERS    |
| State Miscellaneous Tier 1          | 47.5                | 47.5 | 13.4            | 13.4 | 54,435      | 54,501 | 3,043.9                       | 3,016.4 |
| State Miscellaneous Tier 2          | 46.4                | 46.4 | 13.2            | 13.7 | 46,118      | 46,128 | 37.3                          | 36.3    |
| State Industrial                    | 45.8                | 46.0 | 8.5             | 9.5  | 43,326      | 43,487 | 77.8                          | 78.1    |
| State Safety                        | 47.7                | 47.7 | 6.3             | 6.7  | 57,063      | 57,063 | 195.5                         | 197.9   |
| State Peace Officers & Firefighters | 41.6                | 41.6 | 10.6            | 11.2 | 67,525      | 67,525 | 634.9                         | 634.9   |
| California Highway Patrol           | 39.6                | 39.6 | 13.8            | 13.3 | 76,470      | 76,470 | 260.0                         | 258.2   |
| Schools                             | 46.1                | 46.1 | 8.4             | 9.5  | 33,091      | 33,149 | 1,730.7                       | 1,725.7 |

\* Does not include PPPA amounts

## Appendix 2: Liability Comparison

(\$ millions)

| Plan                                | Present Value of All Future Benefits |               |               |                  |               |               | Present Value of Future Salaries |                |              |
|-------------------------------------|--------------------------------------|---------------|---------------|------------------|---------------|---------------|----------------------------------|----------------|--------------|
|                                     | Active/Transfer                      |               |               | Inactive/Retired |               |               |                                  |                |              |
|                                     | EFI                                  | PERS          | Ratio         | EFI              | PERS          | Ratio         | EFI                              | PERS           | Ratio        |
| State Miscellaneous                 | 38,796                               | 38,444        | 100.9%        | 33,236           | 33,267        | 100.0%        | 74,822                           | 74,803         | 100.0%       |
| State Industrial                    | 1,589                                | 1,608         | 98.8%         | 870              | 861           | 101.0%        | 3,586                            | 3,560          | 100.7%       |
| State Safety                        | 3,913                                | 3,906         | 100.2%        | 2,345            | 2,345         | 100.0%        | 9,643                            | 9,611          | 100.3%       |
| State Peace Officers & Firefighters | 17,088                               | 17,198        | 99.4%         | 8,705            | 8,800         | 98.9%         | 27,381                           | 27,691         | 98.9%        |
| California Highway Patrol           | 3,677*                               | 3,669*        | 100.2%        | 3,260**          | 3,348**       | 97.3%         | 5,428                            | 5,423          | 100.1%       |
| <b>Total State</b>                  | <b>65,063</b>                        | <b>64,825</b> | <b>100.4%</b> | <b>48,416</b>    | <b>48,621</b> | <b>99.6%</b>  | <b>120,860</b>                   | <b>121,088</b> | <b>99.8%</b> |
|                                     |                                      |               |               |                  |               |               |                                  |                |              |
| <b>Schools</b>                      | <b>34,293</b>                        | <b>33,401</b> | <b>102.7%</b> | <b>19,337</b>    | <b>19,208</b> | <b>100.7%</b> | <b>78,656</b>                    | <b>79,790</b>  | <b>98.6%</b> |

\* represents active and inactive/terminated

\*\* represents retired/disabled/beneficiaries

